Colonial Pipeline Company

Drain-Up Plan
Revision 1

Incident: **CR-251**

Location: **PELHAM, AL**

Date & Time Prepared: **NOVEMBER 1, 2016**

Prepared by:		Steven Walsh	11-2-16
	Sign	Print	Date
Reviewed by:		Stephen S. Thomas	11/2/16
	Sign	Print	Date

APPROVALS

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Colonial OSC:	Paul Senger	PAUL SENGER	11-2-16
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FOSC:	Karen Buerki	Karen Buerki	11/2/16
	Sign	Print	Date
SOSC:		Josh Therrien	11-2-16
	Sign	Print	Date
LOSC:		Danny C. Ray	11/2/16
	Sign	Print	Date

*Please note: All approved plans must be filed with the appropriate Documentation Unit Leader (DOCL) to upload into WebIAP as well as disseminated to proper ICS Staff and/or included in the Situation Display.

Colonial Pipeline Company

Drain-Up Plan

Line 01, Loc. 0401 – CR 251 Event
DTN 59317

Background

Line 01 is leaking at approximate Sta. # 4851+55 in Loc. 0401, Shelby County, AL. This document details the drain-up plan to evacuate product from the pipeline, so that repair activities may begin.

NOTE: This plan EXCLUDES safety-related information and evaluations. A job safety analysis (JSA) has been completed and must be reviewed with all personnel prior to beginning work (see attached).

TORs

Install and tap 2" TORs at the following locations:

- Drain-Up Site #1 – Two (2) TORs at approximate Station 4839+00 (select a site that is upstream of Vent Site # 1 and approximately 10 feet lower in elevation)
- Vent Site #1 – One (1) TOR at approximate Station 4840+62 (local high point)
- Vent Site #2 – One (1) TOR at approximate Station 4855+00 (local high point)
- Drain-Up Site #2 – Two (2) TORs at approximate Station 4856+00 (select a site that is downstream of Vent Site # 2 and approximately 10 feet lower in elevation)

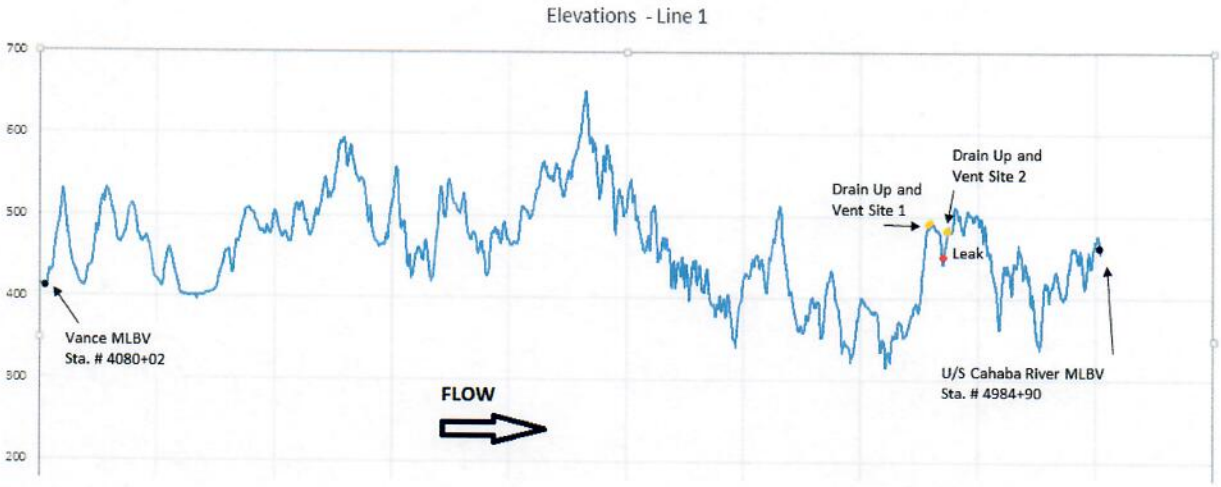
Rectifiers

Verify with local Corrosion Technician that mainline rectifiers within five (5) miles of the leak site are **OFF** upstream and downstream.

Materials and Equipment to Be Used for Drain Up

- Approximately ten (10) tanker trucks (150 bbls)
- Approximately four (4) vacuum trucks (150 bbls) and associated hoses
- Approximately four (4) 2" pneumatic pumps
- Approximately one thousand (1000) feet of 2" hose
- Air compressors

Drain-Up Calculations



Based on elevations, a total of 700 feet of product will drain from the TORs at Drain-Up Site #1 and Drain-Up Site #2. This equates to approximately **854 barrels**. **NOTE:** After product flow stops at the drain-up sites, low lying areas will still contain product, as shown in the alignment sheet snapshot above.

Drain-up Activities at Drain-up Sites # 1 and # 2

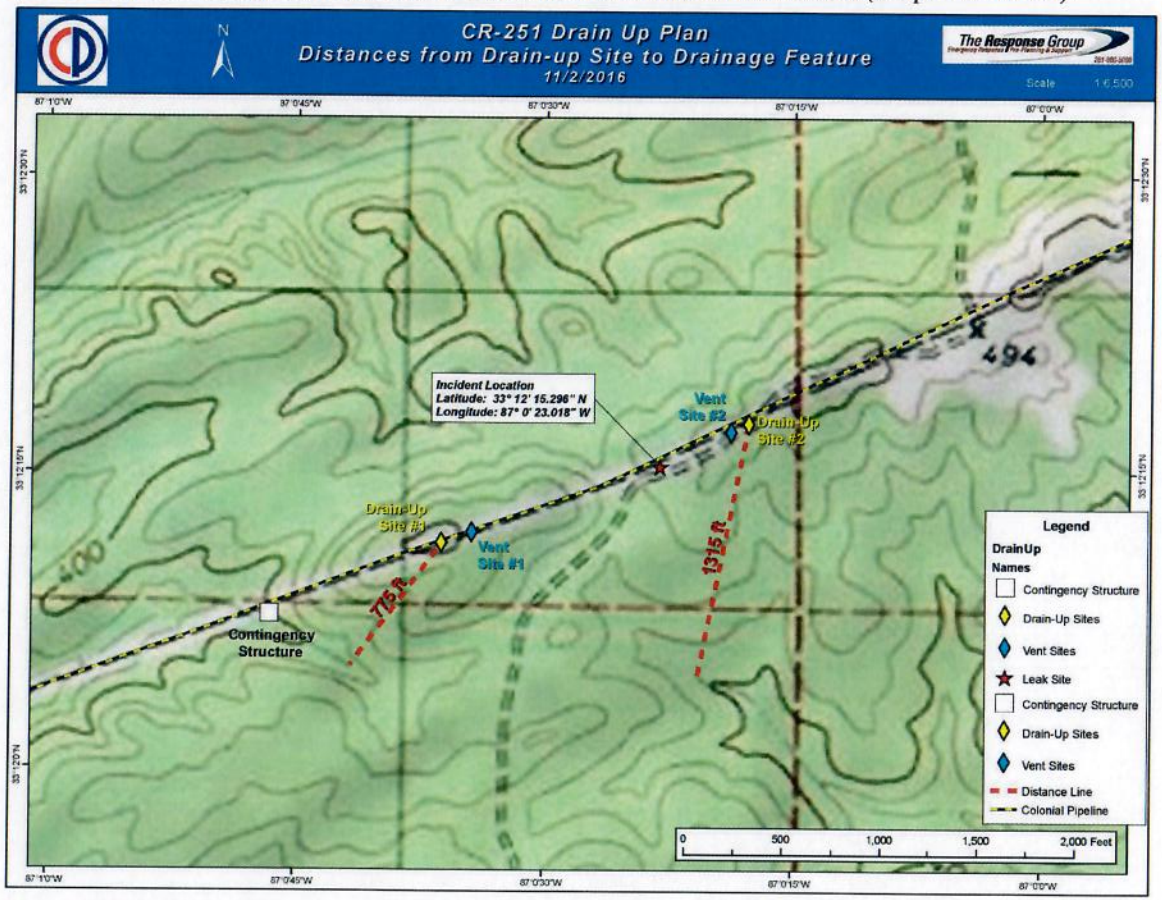
- Close and lock out the Vance Station Mainline Block Valve. [COMPLETE]
- Close and lock out the Vance Station Loop Discharge Valve. [COMPLETE]
- Close and lock out the Vance Station Downstream Isolation Valve. [COMPLETE]
- Close and lock out the Cahaba River Upstream Isolation Valve. [COMPLETE]
- Close and lock out the Cahaba River Downstream Isolation Valve. [COMPLETE]
- Rectifiers in the area turned off. [COMPLETE]
- Grade and prepare TOR sites as necessary to allow tanker truck access to each site.
- Set up hose, pump and manifold system between drain-up sites and tanker trucks. In addition, all activities on last page must be followed.
- Pump product from the TORs at the two drain-up sites into tanker trucks.

Drain-up Activities at Leak Site

- If available, utilize an existing TOR(s) at the leak site to pump product into tanker trucks.
- Conduct venting activities at Vent Sites # 1 and # 2, as needed to assist with drain-up.
- If available, utilize stingers in the existing TOR(s) at the leak site to complete drain up activities when the pneumatic pumps cease to function due to low flow.
- If the existing TOR(s) are not available for use, install and tap TORs as necessary.

Additional Notes:

- Prior to taking any product into a vacuum truck/tanker, open the hatch on the top of the unit to prevent over-pressurizing the unit.
- The closest drainage feature to the drain up locations is an intermittent stream to the southwest of Drain-up Site 1. The distance is approximately 755 feet (see picture below). Drain-up Site 2 is approximately 1,315 feet to the closest intermittent stream (see picture below).



- Berm containment is in place at leak site, secondary containment (and/or absorbent booming) will be in place around pneumatic pumps and trucks. In the event that secondary containment and booming at the drain site is breached resources will be available on site to construct a contingency structure (see picture above).
- Should any product be spilled, all activities will be ceased until the site has been restored.
- Continuous monitoring of vac trucks will be required during the entire drain-up.
- Shutoff valves will be staffed during the entire drain-up

JOB SAFETY ANALYSIS	Colonial Pipeline Company America's Energy Lifeline
JSA No.: Line 1 Drain-Up	
Job/Operation Title: CR 251	**Date:** 11/02/2016
Department/Division/Section: Operations	**Analysis Developed By:** Brian Smith
Location(s): Drain - Up Site's 1 and 2, Leak Site, Vent Site's 1 and 2	**Analysis Reviewed By:** Ray McPeak
Person(s) Performing This Job: Technicians, Inspectors, Contractors	**Supervisor:** TBD
Job Start Date: 11/02/2016	**Duration:** TBD

Task/Step	Potential Hazards	Recommended Safe Job Procedures
1. Excavate pipeline	1. GASOLINE 2. Atmospheric hazards 3. Back strains 4. Confined space 5. Contact with petroleum product 6. Contaminated soil 7. Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skid loader) 8. Excavations/trenches	Excavate side of pipe. Expose side of pipe. Repeat step for other side of pipe. Verify operator OQs & qualifications before work. Verify line location then dig mechanically to no-closer than 2' of line. Hand dig to expose pipe then mechanically dig to within 1'. Ensure all proper procedures are followed. Ensure spoil pile is appropriately placed. Keep all equipment at least 3' away from top edge of trench. Keep water pumped out. Use fencing/flagging around trench. No one enters trench witout proper sloping/shoring. Ladders must extend at least 3' above top of trench & at least every 25'. Ladders tied off. 100% air monitoring in trench when personnel or motorized equipment present. All excavation done under direction of Competent Person.
2. Prep for TOR's coating removal	1. GASOLINE 2. Abrasions 3. Air hoses in good condition. Connections secured with pins and whip checks. 4. Asbestos 5. Atmospheric hazards 6. Back strains 7. Cuts and Scrapes	Remove pipeline coating using appropriate procedures for asbestos-containing materials. Use qualified contractors. Follow regulations and consult with environmental tech for disposal.

Task/Step	Potential Hazards	Recommended Safe Job Procedures
	8. Hand tools 9. Sandblasting	
3. Weld TOR's and Tap	1. GASOLINE 2. Air hoses in good condition. Connections secured with pins and whip checks. 3. Atmospheric hazards 4. Back strains 5. Burns 6. Eye hazards 7. Hand tools 8. TOR's	Ensure all procedures are followed. Monitor atmosphere for any hazards. Ensure air-movers are available if necessary. Ensure that all welding apparatuses are free from any defects (exposed wire, proper grounding, etc.). Don proper PPE (100% FRC, safety glasses, safety-toe footwear, etc.). Assign fire watch. Inspect extinguishers. Don proper welding lens shades and cutting goggle shades. Ring test grinder wheels prior to use. Ensure grinder wheel size/rating are appropriate & that grinder guards in-place. Use pig-tails on extension cords. Maintain proper housekeeping. Wear impact-rated face shields while grinding.
4. Drain-up product	1. GASOLINE 2. Atmospheric hazards 3. Bonding 4. Fire/Explosion	Ensure all procedures are followed. Don proper PPE (100% FRC, safety glasses, safety-toe footwear, etc.). Assign fire watch. Inspect extinguishers. Ensure proper bonding and grounding. . Monitor atmosphere for any hazards. Ensure air-movers are available if necessary.

POTENTIAL PHYSICAL HAZARDS OF THIS JOB

Hazards	Prob.	Sev.
Abrasions	2	3
Air hoses in good condition. Connections secured with pins and whip checks.	2	2
Asbestos	1	1
Atmospheric hazards	3	3
Back strains	2	1
Bonding	2	2
Burns	2	2
Combustible materials	2	2
Confined space	1	2
Contact with petroleum product	2	2
Containers (drums, roll-off, super sac)	2	2
Contaminated soil	2	2
Cuts and Scrapes	2	2

Consequences

Benzene exposure
Caught in or between a stationary/moving object
Contact dermatitis
Cuts and abrasions
Debris in Eyes
Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skid loader)
Exposure to asbestos
Fatigue
Fire/explosion
Grounds
Slips, Trips, Falls

POTENTIAL PHYSICAL HAZARDS OF THIS JOB			
digging with shovels in close proximity of on another	2	1	
Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skid loader)	2	3	
Employees working out of line of fire	2	2	
Excavations/trenches	3	3	
Explosive atmospheres	2	3	
Extreme noise	2	1	
Eye hazards	2	2	
Fire/Explosion	2	3	
Gasoline liquid/vapors	2	3	
Grounding Equipment	3	3	
Hand tools	2	1	
Product vapors	2	3	
Sandblasting	2	2	
TOR's	2	2	

POTENTIAL CHEMICAL HAZARDS OF THIS JOB	
Chemical Hazards	**Description/Health Hazards**
GASOLINE (8006-61-9)	A clear colorless to amber colored, volatile liquid with a petroleum-like odor. Flash point below 0°F. Less dense than water and insoluble in water. Hence floats on water. Vapors heavier than air. Leaked vapors may travel to a source of ignition and then flash back to the source. GASOLINE may be incompatible with strong oxidizing agents such as nitric acid, peroxides, and perchlorates. Charring may occur followed by ignition of unreacted hydrocarbon and other nearby combustibles. In other settings, mostly unreactive. Not affected by aqueous solutions of acids, alkalis, most oxidizing agents, and most reducing agents. When heated sufficiently or when ignited in the presence of air, oxygen or strong oxidizing agents, burns exothermically to produce carbon dioxide and water.

HAZARD CONTROL MEASURES USED FOR THIS JOB	
Administrative Controls: 100% atmospheric monitoring required Certified operators Colonial Daily Work Permit and Safety Checklist C7007 Colonial Safety Awareness Manual Competent person	**Required Training:**

HAZARD CONTROL MEASURES USED FOR THIS JOB	
Contractor safety orientation Excavation and Backfill Procedure Fire watch Full-time dedicated safety inspector Hot work procedure Lockout/tagout Safety Data Sheets (SDS) Safety meeting (pre-job) Spotters	
Engineering Controls: Absorbent pads Air movers (grounded) Back-up alarms Bonding/grounding cable Fire Building Hydrant System Fire Extinguisher Vacuum Truck	**Required PPE:** Face protection Face shield for grinding FRC Clothing Gloves - work gloves Gloves Heat/Cold Resistant Goggles and Safety Glasses Hard Hat Safety toe boots Welding apparel hood/gloves/vest/sleeves
Required Permit(s): Daily Work Permit & Safety Checklist	**Other Information:**

JSABuilder chemical Description/Health Hazards is from the CAMEO database maintained by the U.S. EPA, NOAA, and the U.S. Coast Guard (www.cameochemicals.noaa.gov). The creator of this JSA is responsible for any edits to this information.

Probability	Severity
1 - Low	1 - Low
2 - Medium	2 - Medium
3 - High	3 - High